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EXAMINER	
SCOTT, RANDY A	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/662,379	Applicant(s) NISHIMURA ET AL.	
	Examiner RANDY SCOTT	Art Unit 2453	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *9/16/03*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. JP2002-270715.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/1/08*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to the application filed on 9/16/2003.

Claim Rejections – 35 USC 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be granted a patent unless-

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 14-16, and 21 are rejected under 35 USC 102 (b) as being anticipated by Thang et al (US 2002/0167898).

Regarding claims 1 and 15, Thang et al discloses:

A mobile communication system comprising a plurality of relay routers, a plurality of access routers, and a server apparatus, the mobile communication system (see sec [0077]), being constructed in a configuration wherein a router existing on paths for delivery of data from a correspondent terminal to a mobile terminal via each of access routers used in a multipath handover state by the mobile terminal (see sec [0114], lines 2-6, "set of paths" and sec [0222, lines 2-6, "handover"), multicasts the data, wherein the server apparatus performs such a control as to dynamically switch one router to multicast the data, to another in conjunction with movement of the mobile terminal or the correspondent terminal (see sec [0213], which teaches MPLS and multicasting).

Regarding claims 2 and 14, Thang et al disclose:

Acquiring means for acquiring from each access router, path information between a router connected to the correspondent terminal and each of the access routers used in the multipath handover state by the mobile terminal (see sec [0079], which teaches path information being provided to a plurality of routers from a router); selecting means for making a comparison of the path information acquired by the acquiring means and selecting a router to multicast the data, based on a result of the comparison; and instructing means for instructing the router selected by the selecting means, to multicast the data (see sec [0107], lines 7-11, which discloses selecting an optimal router with the optimal shortest path and sec [0213], which teaches multicasting upon selection of a router).

Regarding claims 16 and 21, Thang et al disclose:

Acquiring means for acquiring path information between a router connected to the correspondent terminal and each of the access routers used in the multipath handover state by the mobile terminal, based on information in a link state database of OSPF, which was acquired from the router or the access router (see sec [0111], lines 2-13, "OSPF routing table"); selecting means for making a comparison of the path information acquired by the acquiring means and selecting a router to multicast the data, based on a result of the comparison (see sec [0114], lines 1-4, which discloses choosing a router based on path analysis); and instructing means for instructing the router selected by the selecting means, to multicast the data (see sec [0213]).

Claim Rejections – 35 USC 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained through the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thang et al (US 2002/0167898), in view of Cheng (US 2002/0150094).

Regarding claim 3, Thang et al disclose the invention substantially as indicated in the claims discussed above; However, Thang et al doesn't disclose:

The method wherein a router connected to the correspondent terminal transmits path information to each of the access routers used in the multipath handover state by the mobile terminal, and wherein each path information is routed through a shortest path from said router as a start point to each of the access routers as an end point, a router passed by each path information records identification information of said router in each path information, each of the access routers refers to the path information received, so as to acquire routers on the shortest path from the start point to the end point, and a passing order thereof on the shortest path, wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process.

The general concept of wherein a router connected to the correspondent terminal transmits path information to each of the access routers used in the multipath handover state by the mobile terminal (see sec [0141], lines 20-25 and sec [0142], lines 4-8, which teaches that the

location information is sent to the routers in the handover of multicast sessions for the mobile environment), and wherein each path information is routed through a shortest path from said router as a start point to each of the access routers as an end point (see sec [0252] and [0256], which teaches shortest path for end to end transmission), a router passed by each path information records identification information of said router in each path information (see sec [0053], lines 2-6, which teaches a root identifier that identifies regions information of multicast group addresses in which routers use to direct packets), and each of the access routers refers to the path information received, so as to acquire routers on the shortest path from the start point to the end point, and a passing order thereof on the shortest path (see sec [0162], lines 7-10, which teaches that the shortest path from a source to each of the receivers and the multicast tree is shared by all sources and receivers of the same group), wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process (see sec [0130], lines 7-12, which discloses the selection and acquisition process for routers that handle the multicast traffic) are well known within the art as illustrated by Cheng et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of wherein a router connected to the correspondent terminal transmits path information to each of the access routers used in the multipath handover state by the mobile terminal, and wherein each path information is routed through a shortest path from said router as a start point to each of the access routers as an end point, a router passed by each path information records identification information of said router

in each path information, and each of the access routers refers to the path information received, so as to acquire routers on the shortest path from the start point to the end point, and a passing order thereof on the shortest path as taught by Cheng et al in order to sufficiently implement a multicasting protocol.

Regarding claim 6, Thang et al disclose the invention substantially as indicated in the claims discussed above; However, Thang et al doesn't disclose:

The method wherein a router connected to the correspondent terminal transmits path information to each of the access routers used in the multipath handover state by the mobile terminal, and wherein each path information is routed through a shortest path from said router as a start point to each of the access routers as an end point, a router passed by each path information records identification information of said router in each path information, each of the access routers refers to the path information received, so as to acquire routers on the shortest path from the start point to the end point, and a passing order thereof on the shortest path, wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process.

The general concept of wherein a router connected to the correspondent terminal transmits path information to each of the access routers used in the multipath handover state by the mobile terminal (see sec [0141], lines 20-25 and sec [0142], lines 4-8, which teaches that the location information is sent to the routers in the handover of multicast sessions for the mobile environment), and wherein each path information is routed through a shortest path from said router as a start point to each of the access routers as an end point (see sec [0252] and [0256],

which teaches shortest path for end to end transmission), a router passed by each path information records identification information of said router in each path information (see sec [0053], lines 2-6, which teaches a root identifier that identifies regions information of multicast group addresses in which routers use to direct packets), and each of the access routers refers to the path information received, so as to acquire routers on the shortest path from the start point to the end point, and a passing order thereof on the shortest path (see sec [0162], lines 7-10, which teaches that the shortest path from a source to each of the receivers and the multicast tree is shared by all sources and receivers of the same group), wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process (see sec [0130], lines 7-12, which discloses the selection and acquisition process for routers that handle the multicast traffic) are well known within the art as illustrated by Cheng et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of wherein a router connected to the correspondent terminal transmits path information to each of the access routers used in the multipath handover state by the mobile terminal, and wherein each path information is routed through a shortest path from said router as a start point to each of the access routers as an end point, a router passed by each path information records identification information of said router in each path information, and each of the access routers refers to the path information received, so as to acquire routers on the shortest path from the start point to the end point, and a passing

order thereof on the shortest path as taught by Cheng et al in order to sufficiently implement a multicasting protocol.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thang et al (US 2002/0167898) in view of Navas (US 2003/0026268).

Regarding claim 4, Thang et al disclose a server apparatus connected to a plurality of relay routers and to a plurality of access routers, the server apparatus being configured to instruct a router existing on paths for delivery of data from a correspondent terminal to a mobile terminal via each of access routers used in a multipath handover state by the mobile terminal (see sec [0222], lines 2-5, “handover”).

Thang et al disclose all the limitations of claim 4 except for wherein the selecting means of the server apparatus is configured to: make sequential comparisons of the path information acquired by the acquiring means, hop by hop from a start point; if about a hop as a target for the comparisons, routers passed in all the paths are identical, perform a comparison about a next hop; select as a router to multicast the data, a router in one hop before a path against which there exists no other path passing an identical router; and thereafter eliminate said path, then repeat the comparison and selecting processes before there returns one or less path as a comparison target or before a comparison is completed for a hop of an end point, and thereby select another router to multicast the data.

The general concept of wherein the selecting means of the server apparatus is configured to: make sequential comparisons of the path information acquired by the acquiring means (see sec [0012], lines 5-8, which teaches comparison of route-specific characteristics and sec [0112]),

hop by hop from a start point; if about a hop as a target for the comparisons, routers passed in all the paths are identical, perform a comparison about a next hop (see sec [0099], lines 5-7, “next hop”); select as a router to multicast the data, a router in one hop before a path against which there exists no other path passing an identical router; and thereafter eliminate said path, then repeat the comparison and selecting processes before there returns one or less path as a comparison target or before a comparison is completed for a hop of an end point, and thereby select another router to multicast the data (see sec [0159], lines 121-16, “choosing the neighbor router) is well known within the art as illustrated by Navas.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of wherein the selecting means of the server apparatus is configured to: make sequential comparisons of the path information acquired by the acquiring means, hop by hop from a start point; if about a hop as a target for the comparisons, routers passed in all the paths are identical, perform a comparison about a next hop; select as a router to multicast the data, a router in one hop before a path against which there exists no other path passing an identical router; and thereafter eliminate said path, then repeat the comparison and selecting processes before there returns one or less path as a comparison target or before a comparison is completed for a hop of an end point, and thereby select another router to multicast the data as taught by Navas in order to sufficiently implement a routing system for choosing optimal paths or routes.

7. Claims 5, 9, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thang et al (US 2002/0167898) in view of Sekine et al (US 2001/0024429).

Regarding claim 5, Thang et al disclose the invention substantially as discussed in the claims disclosed above; However, Thang et al does not disclose:

Cancelling the multicast of the data, in conjunction with the selection of the router receives a multicast stop request from the server apparatus and stops multicasting the data, and wherein the multicast stop request contains identification information of a sender and a recipient of the multicast stop request and also contains identification information of the mobile terminal.

The general concept of cancelling the multicast of the data (see sec [0129], lines 4-7) and wherein the router removed from the router to multicast the data, in conjunction with the selection of the router receives a multicast stop request from the server apparatus and stops multicasting the data (see sec [0129-0130], which teaches that the request is sent between the MCC from the base station), and wherein the multicast start request contains identification information of a sender and a recipient of the multicast start request and also contains identification information of the mobile terminal and identification information of routers as multicast destinations, and wherein the multicast stop request contains identification information of a sender and a recipient of the multicast stop request and also contains identification information of the mobile terminal (see sec [0129-0130], which teaches a handover stop request) is well known within the art as illustrated by Sekine et al..

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of cancelling the multicast of the data, as taught by Sekine et al in order to sufficiently implement a handover protocol.

Regarding claim 9, Thang et al disclose the invention substantially as discussed in the claims disclosed above; However, Thang et al does not disclose:

Cancelling the multicast of the data, in conjunction with the selection of the router receives a multicast stop request from the server apparatus and stops multicasting the data, and wherein the multicast stop request contains identification information of a sender and a recipient of the multicast stop request and also contains identification information of the mobile terminal.

The general concept of cancelling the multicast of the data (see sec [0129], lines 4-7) and wherein the router removed from the router to multicast the data, in conjunction with the selection of the router receives a multicast stop request from the server apparatus and stops multicasting the data (see sec [0129-0130], which teaches that the request is sent between the MCC from the base station), and wherein the multicast start request contains identification information of a sender and a recipient of the multicast start request and also contains identification information of the mobile terminal and identification information of routers as multicast destinations, and wherein the multicast stop request contains identification information of a sender and a recipient of the multicast stop request and also contains identification information of the mobile terminal (see sec [0129-0130], which teaches a handover stop request) is well known within the art as illustrated by Sekine et al..

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of cancelling the multicast of the data, as taught by Sekine et al in order to sufficiently implement a handover protocol.

Regarding claim 13, Thang et al disclose the invention substantially as discussed in the claims disclosed above; However, Thang et al does not disclose:

Cancelling the multicast of the data, in conjunction with the selection of the router receives a multicast stop request from the server apparatus and stops multicasting the data, and

wherein the multicast stop request contains identification information of a sender and a recipient of the multicast stop request and also contains identification information of the mobile terminal.

The general concept of cancelling the multicast of the data (see sec [0129], lines 4-7) and wherein the router removed from the router to multicast the data, in conjunction with the selection of the router receives a multicast stop request from the server apparatus and stops multicasting the data (see sec [0129-0130], which teaches that the request is sent between the MCC from the base station), and wherein the multicast start request contains identification information of a sender and a recipient of the multicast start request and also contains identification information of the mobile terminal and identification information of routers as multicast destinations, and wherein the multicast stop request contains identification information of a sender and a recipient of the multicast stop request and also contains identification information of the mobile terminal (see sec [0129-0130], which teaches a handover stop request) is well known within the art as illustrated by Sekine et al..

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of cancelling the multicast of the data, as taught by Sekine et al in order to sufficiently implement a handover protocol.

8. Claims 7-8, and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thang et al (US 2002/0167898), in view of Cheng (US 2002/0150094), further in view of Cetin et al (US 2004/0028064).

Regarding claim 7, Thang et al discloses the invention substantially as taught in the claims discussed above; However, Thang et al does not teach:

The method wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process and wherein one of the access routers used in the multipath handover state by the mobile terminal sends a path information request to the correspondent terminal under communication with the mobile terminal.

The general concepts of wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process (see sec [0130], lines 7-12, which discloses the selection and acquisition process for routers that handle the multicast traffic) and wherein one of the access routers used in the multipath handover state by the mobile terminal sends a path information request to the correspondent terminal under communication with the mobile terminal (see sec [0098] and fig. 40) are well known within the art as illustrated by Cheng et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process, as taught by Cheng et al in order to sufficiently implement a multicasting protocol.

Thang et al, in combination with Cheng et al, disclose all the limitations of claims 7-8, and 11-12 except for wherein the router connected to the correspondent terminal terminates the

path information request and at this opportunity, said router sends path information to each of the access routers used in the multipath handover state by the mobile terminal.

The general concept of wherein the router connected to the correspondent terminal terminates the path information request and at this opportunity, said router sends path information to each of the access routers used in the multipath handover state by the mobile terminal (see sec [0040], which discloses terminating a path request) is well known within the art as illustrated by Cetin et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al and Cheng et al with the general concept of wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process, as taught by Cetin et al in order to sufficiently implement a switching environment.

Regarding claim 8, Thang et al discloses the invention substantially as taught in the claims discussed above; However, Thang et al does not teach:

The method wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process and wherein one of the access routers used in the multipath handover state by the mobile terminal sends a path information request to the correspondent terminal under communication with the mobile terminal.

The general concepts of wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process (see sec [0130], lines 7-12, which discloses the selection and acquisition process for routers that handle the multicast traffic) and wherein one of the access routers used in the multipath handover state by the mobile terminal sends a path information request to the correspondent terminal under communication with the mobile terminal (see sec [0098] and fig. 40) are well known within the art as illustrated by Cheng et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process, as taught by Cheng et al in order to sufficiently implement a multicasting protocol.

Thang et al, in combination with Cheng et al, disclose all the limitations of claims 7-8, and 11-12 except for wherein the router connected to the correspondent terminal terminates the path information request and at this opportunity, said router sends path information to each of the access routers used in the multipath handover state by the mobile terminal.

The general concept of wherein the router connected to the correspondent terminal terminates the path information request and at this opportunity, said router sends path information to each of the access routers used in the multipath handover state by the mobile terminal (see sec [0040], which discloses terminating a path request) is well known within the art as illustrated by Cetin et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al and Cheng et al with the general concept of wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process, as taught by Cetin et al in order to sufficiently implement a switching environment.

Regarding claim 11, Thang et al discloses the invention substantially as taught in the claims discussed above; However, Thang et al does not teach:

The method wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process and wherein one of the access routers used in the multipath handover state by the mobile terminal sends a path information request to the correspondent terminal under communication with the mobile terminal.

The general concepts of wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process (see sec [0130], lines 7-12, which discloses the selection and acquisition process for routers that handle the multicast traffic) and wherein one of the access routers used in the multipath handover state by the mobile terminal sends a path information request to the correspondent terminal under communication with the mobile terminal (see sec [0098] and fig. 40) are well known within the art as illustrated by Cheng et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process, as taught by Cheng et al in order to sufficiently implement a multicasting protocol.

Thang et al, in combination with Cheng et al, disclose all the limitations of claims 7-8, and 11-12 except for wherein the router connected to the correspondent terminal terminates the path information request and at this opportunity, said router sends path information to each of the access routers used in the multipath handover state by the mobile terminal.

The general concept of wherein the router connected to the correspondent terminal terminates the path information request and at this opportunity, said router sends path information to each of the access routers used in the multipath handover state by the mobile terminal (see sec [0040], which discloses terminating a path request) is well known within the art as illustrated by Cetin et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al and Cheng et al with the general concept of wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process, as taught by Cetin et al in order to sufficiently implement a switching environment.

Regarding claim 12, Thang et al discloses the invention substantially as taught in the claims discussed above; However, Thang et al does not teach:

The method wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process and wherein one of the access routers used in the multipath handover state by the mobile terminal sends a path information request to the correspondent terminal under communication with the mobile terminal.

The general concepts of wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process (see sec [0130], lines 7-12, which discloses the selection and acquisition process for routers that handle the multicast traffic) and wherein one of the access routers used in the multipath handover state by the mobile terminal sends a path information request to the correspondent terminal under communication with the mobile terminal (see sec [0098] and fig. 40) are well known within the art as illustrated by Cheng et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process, as taught by Cheng et al in order to sufficiently implement a multicasting protocol.

Thang et al, in combination with Cheng et al, disclose all the limitations of claims 7-8, and 11-12 except for wherein the router connected to the correspondent terminal terminates the

path information request and at this opportunity, said router sends path information to each of the access routers used in the multipath handover state by the mobile terminal.

The general concept of wherein the router connected to the correspondent terminal terminates the path information request and at this opportunity, said router sends path information to each of the access routers used in the multipath handover state by the mobile terminal (see sec [0040], which discloses terminating a path request) is well known within the art as illustrated by Cetin et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al and Cheng et al with the general concept of wherein at an opportunity of a change in the access routers used in the multipath handover state by the mobile terminal, the server apparatus sequentially executes the acquiring process, the selecting process, and the instructing process, as taught by Cetin et al in order to sufficiently implement a switching environment.

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thang et al (US 2002/0167898), and further in view of Sekine et al (US 2001/0024429), further in Furukawa et al (US 2002/0009073).

Regarding claim 10, Thang et al disclose a server apparatus connected to a plurality of relay routers and to a plurality of access routers, the server apparatus being configured to instruct a router existing on paths for delivery of data from a correspondent terminal to a mobile terminal via each of access routers used in a multipath handover state by the mobile terminal (see sec [0222], lines 2-5, “handover”).

Thang et al disclose all the limitations of claim 10 except for cancelling the multicast of the data and wherein the router removed from the router to multicast the data, in conjunction with the selection of the router receives a multicast stop request from the server apparatus and stops multicasting the data.

The general concept of cancelling the multicast of the data (see sec [0129], lines 4-7) and wherein the router removed from the router to multicast the data, in conjunction with the selection of the router receives a multicast stop request from the server apparatus and stops multicasting the data (see sec [0129-0130], which teaches that the request is sent between the MCC from the base station) is well known within the art as illustrated by Sekine et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of cancelling the multicast of the data, as taught by Sekine et al in order to sufficiently implement a handover protocol.

Thang et al, in combination with Sekine et al, disclose all the limitations of claim 10 except wherein, when receiving the data addressed to the mobile terminal, the router newly selected by the selecting means makes copies of the data by the number of routers as multicast destinations and transmits the data copies to the respective multicast destinations.

The general concept of wherein, when receiving the data addressed to the mobile terminal, the router newly selected by the selecting means makes copies of the data by the number of routers as multicast destinations and transmits the data copies to the respective multicast destinations (see sec [1128], lines 1-3, which teaches copying of internal IP packets) is well known within the art as illustrated by Furukawa et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al and Sekine et al with the general concept of wherein, when receiving the data addressed to the mobile terminal, the router newly selected by the selecting means makes copies of the data by the number of routers as multicast destinations and transmits the data copies to the respective multicast destinations, as taught by Furukawa et al in order to sufficiently implement a multicasting protocol.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thang et al (US 2002/0167898), in view of Johansson et al (US 2002/0080752).

Regarding claim 17, Thang et al disclose a server apparatus connected to a plurality of relay routers and to a plurality of access routers, the server apparatus being configured to instruct a router existing on paths for delivery of data from a correspondent terminal to a mobile terminal via each of access routers used in a multipath handover state by the mobile terminal (see sec [0222], lines 2-5, "handover"), acquiring from at least one router belonging to each management area of OSPF used by a network, information in a link state database made in the management area to which said router belongs (see sec [0111], lines 2-10, "ospf"); receiving from a router connected to the correspondent terminal, a start point search response indicating that said router is a start point of path information; activate a shortest path algorithm with the router indicated by the start point search response (see sec [0104, lines 4-8, "spaaning tree algorithm" and sec [0111], lines 5-8, "shortest path calculations"), as a start point, and thereby generate a shortest hop tree with said router at a start point; and refer to the shortest hop tree to acquire as path information, routers on a shortest path from the router as a start point to each access router as an

end point, and a passing order thereof (see sec [0113], lines 1-4, "next hop along the shortest path").

Thang et al disclose all the limitations of claim 17 except for acquiring from at least one router belonging to each management area of OSPF used by a network, information in a link state database made in the management area to which said router belongs; changing all cost values between routers or access routers, recorded in the link state database, to an identical numeral larger than 0 according to need; receive from a router connected to the correspondent terminal, a start point search response indicating that said router is a start point of path information; activate a shortest path algorithm with the router indicated by the start point search response, as a start point, and thereby generate a shortest hop tree with said router at a start point; and refer to the shortest hop tree to acquire as path information, routers on a shortest path from the router as a start point to each access router as an end point, and a passing order thereof.

The general concept of changing all cost values between routers or access routers, recorded in the link state database, to an identical numeral larger than 0 according to need (see sec [0077], lines 5-10, "lower cost") is well known within the art as illustrated by Johansson et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of changing all cost values between routers or access routers, recorded in the link state database, to an identical numeral larger than 0 according to need as taught by Johansson et al in order to sufficiently implement shortest path routing system.

11. Claims 18, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thang et al (US 2002/0167898), in view of Johansson et al (US 2002/0080752), further in view of Ludwig et al (US 6,816,471).

Regarding claim 18, Thang et al disclose a server apparatus connected to a plurality of relay routers and to a plurality of access routers, the server apparatus being configured to instruct a router existing on paths for delivery of data from a correspondent terminal to a mobile terminal via each of access routers used in a multipath handover state by the mobile terminal (see sec [0222], lines 2-5, “handover”), acquiring from at least one router belonging to each management area of OSPF used by a network, information in a link state database made in the management area to which said router belongs (see sec [0111], lines 2-10, “ospf”); receiving from a router connected to the correspondent terminal, a start point search response indicating that said router is a start point of path information; activate a shortest path algorithm with the router indicated by the start point search response (see sec [0104, lines 4-8, “spanning tree algorithm” and sec [0111], lines 5-8, "shortest path calculations”), as a start point, and thereby generate a shortest hop tree with said router at a start point; and refer to the shortest hop tree to acquire as path information, routers on a shortest path from the router as a start point to each access router as an end point, and a passing order thereof (see sec [0113], lines 1-4, “next hop along the shortest path”); However, Thang et al does not disclose:

A method for acquiring from at least one router belonging to each management area of OSPF used by a network, information in a link state database made in the management area to which said router belongs; changing all cost values between routers or access routers, recorded in the link state database, to an identical numeral larger than 0 according to need; receive from a

router connected to the correspondent terminal, a start point search response indicating that said router is a start point of path information; activate a shortest path algorithm with the router indicated by the start point search response, as a start point, and thereby generate a shortest hop tree with said router at a start point; and refer to the shortest hop tree to acquire as path information, routers on a shortest path from the router as a start point to each access router as an end point, and a passing order thereof.

The general concept of changing all cost values between routers or access routers, recorded in the link state database, to an identical numeral larger than 0 according to need (see sec [0077], lines 5-10, “lower cost”) is well known within the art as illustrated by Johansson et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of changing all cost values between routers or access routers, recorded in the link state database, to an identical numeral larger than 0 according to need as taught by Johansson et al in order to sufficiently implement shortest path routing system.

Thang et al, in combination with Johansson et al and Thang et al, disclose all the limitations of claim 18 except for wherein the start point search request contains identification information of a sender and a recipient of the start point search request and also contains identification information of the mobile terminal.

The general concept of wherein the start point search request contains identification information of a sender and a recipient of the start point search request and also contains identification information of the mobile terminal (see col. 7, lines 8-11, “defined start point” and

col. 8, lines 10-14, which teaches data unit addressing and identification) is well known within the art as illustrated by Ludwig et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al and Johansson et al with the general concept of wherein the start point search request contains identification information of a sender and a recipient of the start point search request and also contains identification information of the mobile terminal as taught by Ludwig et al in order to sufficiently implement a multi-path handover environment.

Regarding claim 19, Thang et al disclose a server apparatus connected to a plurality of relay routers and to a plurality of access routers, the server apparatus being configured to instruct a router existing on paths for delivery of data from a correspondent terminal to a mobile terminal via each of access routers used in a multipath handover state by the mobile terminal (see sec [0222], lines 2-5, “handover”), acquiring from at least one router belonging to each management area of OSPF used by a network, information in a link state database made in the management area to which said router belongs (see sec [0111], lines 2-10, “ospf”); receiving from a router connected to the correspondent terminal, a start point search response indicating that said router is a start point of path information; activate a shortest path algorithm with the router indicated by the start point search response (see sec [0104, lines 4-8, “spanning tree algorithm” and sec [0111], lines 5-8, "shortest path calculations”), as a start point, and thereby generate a shortest hop tree with said router at a start point; and refer to the shortest hop tree to acquire as path information, routers on a shortest path from the router as a start point to each access router as an end point, and a passing order thereof (see sec [0113], lines 1-4, “next hop along the shortest path”); However, Thang et al does not disclose:

A method for acquiring from at least one router belonging to each management area of OSPF used by a network, information in a link state database made in the management area to which said router belongs; changing all cost values between routers or access routers, recorded in the link state database, to an identical numeral larger than 0 according to need; receive from a router connected to the correspondent terminal, a start point search response indicating that said router is a start point of path information; activate a shortest path algorithm with the router indicated by the start point search response, as a start point, and thereby generate a shortest hop tree with said router at a start point; and refer to the shortest hop tree to acquire as path information, routers on a shortest path from the router as a start point to each access router as an end point, and a passing order thereof.

The general concept of changing all cost values between routers or access routers, recorded in the link state database, to an identical numeral larger than 0 according to need (see sec [0077], lines 5-10, “lower cost”) is well known within the art as illustrated by Johansson et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of changing all cost values between routers or access routers, recorded in the link state database, to an identical numeral larger than 0 according to need as taught by Johansson et al in order to sufficiently implement shortest path routing system.

Thang et al, in combination with Johansson et al and Thang et al, disclose all the limitations of claim 19 except for wherein the start point search request contains identification

information of a sender and a recipient of the start point search request and also contains identification information of the mobile terminal.

The general concept of wherein the start point search request contains identification information of a sender and a recipient of the start point search request and also contains identification information of the mobile terminal (see col. 7, lines 8-11, “defined start point” and col. 8, lines 10-14, which teaches data unit addressing and identification) is well known within the art as illustrated by Ludwig et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al and Johansson et al with the general concept of wherein the start point search request contains identification information of a sender and a recipient of the start point search request and also contains identification information of the mobile terminal as taught by Ludwig et al in order to sufficiently implement a multi-path handover environment.

Regarding claim 20, Thang et al disclose a server apparatus connected to a plurality of relay routers and to a plurality of access routers, the server apparatus being configured to instruct a router existing on paths for delivery of data from a correspondent terminal to a mobile terminal via each of access routers used in a multipath handover state by the mobile terminal (see sec [0222], lines 2-5, “handover”), acquiring from at least one router belonging to each management area of OSPF used by a network, information in a link state database made in the management area to which said router belongs (see sec [0111], lines 2-10, “ospf”); receiving from a router connected to the correspondent terminal, a start point search response indicating that said router is a start point of path information; activate a shortest path algorithm with the router indicated by the start point search response (see sec [0104, lines 4-8, “spanning tree algorithm” and sec

[0111], lines 5-8, "shortest path calculations"), as a start point, and thereby generate a shortest hop tree with said router at a start point; and refer to the shortest hop tree to acquire as path information, routers on a shortest path from the router as a start point to each access router as an end point, and a passing order thereof (see sec [0113], lines 1-4, "next hop along the shortest path"); However, Thang et al does not disclose:

A method for acquiring from at least one router belonging to each management area of OSPF used by a network, information in a link state database made in the management area to which said router belongs; changing all cost values between routers or access routers, recorded in the link state database, to an identical numeral larger than 0 according to need; receive from a router connected to the correspondent terminal, a start point search response indicating that said router is a start point of path information; activate a shortest path algorithm with the router indicated by the start point search response, as a start point, and thereby generate a shortest hop tree with said router at a start point; and refer to the shortest hop tree to acquire as path information, routers on a shortest path from the router as a start point to each access router as an end point, and a passing order thereof.

The general concept of changing all cost values between routers or access routers, recorded in the link state database, to an identical numeral larger than 0 according to need (see sec [0077], lines 5-10, "lower cost") is well known within the art as illustrated by Johansson et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al with the general concept of changing all cost values between routers or access routers, recorded in the link state database, to an identical numeral larger than 0 according

to need as taught by Johansson et al in order to sufficiently implement shortest path routing system.

Thang et al, in combination with Johansson et al and Thang et al, disclose all the limitations of claim 20 except for wherein the start point search request contains identification information of a sender and a recipient of the start point search request and also contains identification information of the mobile terminal.

The general concept of wherein the start point search request contains identification information of a sender and a recipient of the start point search request and also contains identification information of the mobile terminal (see col. 7, lines 8-11, “defined start point” and col. 8, lines 10-14, which teaches data unit addressing and identification) is well known within the art as illustrated by Ludwig et al.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Thang et al and Johansson et al with the general concept of wherein the start point search request contains identification information of a sender and a recipient of the start point search request and also contains identification information of the mobile terminal as taught by Ludwig et al in order to sufficiently implement a multi-path handover environment.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy A. Scott whose telephone number is (571) 272-3797. The examiner can normally be reached on Monday-Thursday 7:30 am-5:00 pm, second Fridays 7:30 am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571) 272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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